

USSN 09/803,044

Art Unit 1641

**Amendments to the claims:**

Please amend the claims as follows:

1.(currently amended) A method of stabilizing porous silicon (PSi) comprising the steps of:

preparing a porous silicon structure having a surface terminated with hydrogen atoms; and

subjecting said porous silicon structure to thermal processing at an elevated temperature less than 250°C in the presence of an alkene reactant to substitute said hydrogen atoms with a protective organic passivating layer, wherein the alkene reactant is deoxygenated and purified to free it of peroxide and hydroperoxide impurities ~~prior to thermal processing~~ prior to said thermal processing, and wherein said alkene reactant has a carbon chain having a length greater than or equal to 8.

2.(cancelled)

3.(original) A method as claimed in claim 1, wherein said organic thermal processing is carried out in the absence of an external catalyst.

4.(original) A method as claimed in claim 1, wherein said protective organic layer has a thickness is equal to or less than the length of the molecules of said reactants.

5.(cancelled)

6.(previously amended) A method as claimed in claim 1, wherein said reactant is selected from the group consisting of: 1-decene, ethyl undecylenate, and 1,7-octadiene.

7.(previously amended) A method as claimed in claim 6, wherein said thermal processing takes place at a temperature of between 50°C and 250°C.

8.(previously amended) A method as claimed in claim 7, wherein said thermal processing takes place at a temperature of between 85°C and 115°C .

9.(original) A method as claimed in claim 6, wherein said porous silicon structure is reacted with 1-decene at 115°C.

10.(original) A method as claimed in claim 9, wherein said porous silicon structure is reacted with 1-decene for about sixteen hours.

USSN 09/803,044

Art Unit 1641

11.(cancelled)

12.(previously amended) A method as claimed in claim 1, wherein said reactants are purified prior to said thermal processing step by distillation.

13.(previously amended) A method as claimed in claim 12, wherein prior to thermal processing said porous silicon structure is rinsed with an organic solvent and then dried.

14.(original) A method as claimed in claim 13, wherein said organic solvent is ethanol.

15.(previously amended) A method as claimed in claim 13, wherein said porous silicon structure is dried by exposure to an inert gas flow.

16.(original) A method as claimed in claim 15, wherein said inert gas is selected from the group consisting of argon and nitrogen.

17.(cancelled)

18.(cancelled)

19.(previously amended) A method as claimed in claim 1, wherein said porous silicon structure is thermally reacted with ethyl undecylenate to produce a surface bearing an ester function at the end of an organic monolayer covalently attached to porous silicon.

20.(original) A method as claimed in claim 19, wherein said thermal processing takes place at 85°C.

21.(currently amended) A method of making a porous silicon structure, comprising:  
treating a silicon wafer in an aqueous acid solution to remove native oxide and produce a hydrogen-terminated surface;

electrochemically etching said hydrogen terminated surface to provide a porous silicon (PSi) film;

providing an alkene reactant capable of producing a protective organic layer on said structure;

deoxygenating said alkene reactant and purifying it to remove peroxide and hydroperoxide impurities; and

subjecting said porous silicon film to thermal processing in the presence of said alkene reactant at a moderately elevated temperature less than 250°C to substitute

USSN 09/803,044

Art Unit 1641

hydrogen atoms in said hydrogen-terminated surface with a protective organic passivating layer.

22.(original) A method as claimed in claim 21, wherein said reactant is purified by distillation.

23.(previously amended). A method as claimed in claim 21, wherein said thermal processing takes place in the absence of an external catalyst.

24.(original) A method as claimed in claim 21, wherein said porous silicon film is subjected to said thermal processing at a temperature between 85 and 115°C.

25.(previously amended) A method as claimed in claim 21, wherein said protective organic layer is an organic monolayer of a thickness substantially equally to the length of molecules in said organic protective layer.

26.(cancelled)

27.(previously amended) A method as claimed in claim 21, wherein said porous silicon film is reacted with compounds selected from the group consisting of: 1-decene, ethyl undecylenate, and 1,7-octadiene.

28.(previously amended) A bio or chemical sensor comprising a porous silicon structure made by the method defined in claim 1.

29.(previously amended) A bio or chemical sensor comprising a porous silicon structure made by the method defined in claim 21.

30.(previously amended) A medical device comprising a porous silicon structure made by the method defined in claim 1.

31.(previously amended) A medical device comprising a porous silicon structure made by the process defined in claim 21.

32.(original). An electronic/photonic/optoelectronic device comprising a porous silicon structure made by the method as defined in claim 1.

33.(previously amended) An electronic/photonic/optoelectronic device comprising a porous silicon structure made by the method as defined in claim 21.

USSN 09/803,044

Art Unit 1641

34.(previously amended). In a device for the detection of DNA or proteins for genomics applications, the improvement wherein said device includes a stabilized porous silicon structure made by the method defined in claim 1.

35.(previously amended). In a device for the detection of DNA or proteins for genomics applications, the improvement wherein the device includes a stabilized porous silicon structure made by the method defined in claim 21.